	Furnace No. 35	Furnace No. 36
Area of ffas ports	0 m² 7300	0 m² 3935
Velocity of gas at port	23 m 11 per	4!2 m 90 per
Area of air ports	2 rn² 70	3 m² 75
Velocity of air at port	8 rn 72 per	6 m 28 per
Slope of gas port	6°	12°
Air port	17°	26°
H = depth of jet = difference *in* level between sill of gas port	0 m 92	1 m 00
Average velocity of the mixture by	11m 80 per sec	20 m 50 per sR *
Average slope of mixture by parallelo-	9° 30'	14° 30'
ti at which the mixture commences to	1531°	646°

These computations would show that the making of the bottom in Furnace No. 35 would be difficult, and it is hard to believe that the design published is correct. [1]>

As regards Furnace No. 36, it will be comparatively easy to make the bottom, and the flame will not be deflected from the surface of the bath. In the operation of this furnace (No. 36) its ports will be burned and worn away, their area will be increased and the velocity of the gas will be accordingly reduced. How much may the port bo worn away without interfering to an appreciable extent with the repairing of the bottom?

The formula *(F),* on page 64, provides the solution of this problem.

The bottom may be made in a satisfactory manner wheiv ^=1400°; the corresponding value of *v* may be deduced:

X

$$,' \qquad \frac{v^2 \sin^2 14.5°}{273 + 1400}$$

$$2X9.81 \qquad 1850 - 1400$$

from which $v = Q$ m 20 per second.

[1] A great deal of empiricism exists in the arrangement of the heads of these furnaces, and in many cases the furnaces as they go into operation differ widely from the drawings. In

some plants no two furnaces have identical heads.